

Please delete the heading beginning with "BACKGROUND OF THE " on page 1, line 6, and replace with the following:

BACKGROUND

Please delete the paragraph beginning with "This invention relates" on page 1, line 8, and replace with the following:

a An embodiment of this invention relates to the field of data transfer between a server and a client and, more specifically, to a system, method, and apparatus for using an intermediate driver to allow an InfiniBand™ server to transfer data with an Ethernet client, where the intermediate driver provides a "fail over" function to improve system performance.

✓ Please delete the heading beginning with "Field of " on page 1, line 7, and replace with the following:

1. Technical Field

✓ Please delete the heading beginning with "Background of " on page 1, line 13, and replace with the following:

2. Description of the Related Arts

✓ Please delete the paragraph beginning with "An embodiment of the" on page 4, line 5, and replace with the following:

a2 An embodiment of the invention allows data to be transferred from a server utilizing a high speed Input/Output (I/O) architecture, such as Infiniband, to a client operating a different I/O architecture, such as Ethernet. Infiniband devices and Ethernet devices transmit data via

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packets having different, non-compatible formats. Therefore, an Ethernet device cannot directly transmit a packet to an Infiniband device, and vice-versa. An embodiment of the present invention is directed to a system, method, and apparatus to use an intermediate driver to transmit data from a server utilizing Infiniband to a client using Ethernet in an uninterrupted manner. The intermediate driver may provide a "fail over" function that ensures data correctly transfers between a client and a server.

Please delete the paragraph beginning with "FIG. 1 illustrates" on page 4, line 14, and replace with the following:

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"FIG. 1 illustrates a block diagram showing devices utilized to transfer data from Virtual Local Area Networks (VLAN) 110, IEEE 802.1Q published 1998, at a server 100 transmitting data via Infiniband to a client 105 receiving data via Ethernet according to an embodiment of the invention. The system allows the server 100 to be represented by multiple VLANs, for example *M* VLANS 110. In other embodiments, the *M* VLANs 110 may not be necessary – the server 100 may instead be located in a single computer, for example. The server 100 may be a server for a backbone network, such as a data center. A local or remote user may desire to access data located within a memory located in the *M* VLANs 110. The server 100 or database may be supported by *M* VLANs 110 to

allow the server or database to operate as quickly and efficiently as possible.

Please delete the paragraph beginning with "Because Infiniband and Ethernet" on page 5, line 1, and replace with the following:

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"Because Infiniband and Ethernet utilize different protocols and packet formats, an Infiniband packet must be converted into an Ethernet format before it can be received by a Ethernet client 105. As illustrated in FIG. 1, the **M** VLANs 110 are coupled to an intermediate driver 115. The intermediate driver 115 may be a Microsoft Network Driver Interface Specification (NDIS), published 1998, driver, used to create **M** virtual miniport instances on top of **N** virtual adapters. NDIS is a network driver interface specification from Microsoft. A network driver interface is a software interface between the transport protocol and the data link protocol (i.e., network driver). The interface provides a protocol manager that accepts requests from the transport layer and activates the network adapter. Network adapters with compliant network drivers can be freely interchanged. This method allows multiple protocol stacks to run over one network adapter.

Please delete the paragraph beginning with "FIG. 6 illustrates" on page 11, line 11, and replace with the following:

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FIG. 6 illustrates a process to determine whether a target Ethernet

link has failed and, if so, to invoke the "fail over" function according to an embodiment of the invention. First, the system determines 600 whether all target Ethernet links (i.e., links between the Ethernet switch 145 and each of the bridges used in the Infiniband-Ethernet bridges 140) are alive.

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If all are alive, processing remains at operation 600. Otherwise, processing proceeds to operation 605. At operation 605, the system determines which bridge of the Infiniband-Ethernet bridges 140 has failed.

Next, the intermediate driver 115 causes the system to stop 610 using the VNIC corresponding to the failed Infiniband-Ethernet bridge. A back-up VNIC is then utilized 615 to transfer data with a corresponding back-up bridge. Processing then returns to operation 600.

Please delete the paragraph beginning with "As discussed above" on page 11, line 20, and replace with the following:

As discussed above, an embodiment of the invention allows data to be transferred from a server 100 utilizing a high speed I/O architecture, such as Infiniband, to a client 105 operating a different I/O architecture, such as Ethernet. Because Infiniband devices and Ethernet devices transmit data via packets having different, non-compatible formats, an Ethernet device cannot directly transmit a packet to an Infiniband device, and vice-versa. An embodiment of the present invention uses an intermediate driver 115 to transmit data from an Infiniband server 100 to an Ethernet client 105 in an uninterrupted manner. The intermediate driver

115 communicates with *N* VNICs 120, each of which represent a particular Infiniband-Ethernet bridge. When data flow through one of the bridges 140 is disrupted, or stops completely, the intermediate driver 115 may be notified of the error through the use of the *N* VNICs 120. In the event of such an error, the intermediate driver 115 may use the *N* VNICs 120 to stop the data flow through the faulty bridge, and instead transmit data through a different bridge. Accordingly, the intermediate driver 115 supports a "fail-over" function.

Please delete the paragraph beginning with "While the description above" on page 12, line 10, and replace with the following:

While the description above refers to particular embodiments of the present invention, it will be understood that many modifications may be made without departing from the spirit thereof. The accompanying claims are intended to cover such modifications as would fall within the true scope and spirit of an embodiment of the present invention. The presently disclosed embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims, rather than the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.
